

Version: [1.38.1.2189]  
 Last Revised: [14-Oct-2021]  
 Products: This firmware supports 5 and 6 Series MSO products with Linux operating system  
 This firmware version is intended for:  
 MSO54, MSO54B, MSO56, MSO56B, MSO58, MSO58B, MSO58LP, LPD64, MSO64, MSO64B,  
 MSO66B and MSO68B

Version: [1.38.2.2498]  
 Last Revised: [26-Nov-2021]  
 Products: This firmware supports 4 Series MSO products  
 This firmware version is intended for:  
 MSO44 and MSO46

Version: 1.38.1.2189 (14-Oct-2021) and 1.38.2.2498 (26-Nov-2021)

#### New Features:

- History Mode:
  - History acquisition mode allows the last N acquisitions to be viewed and analyzed (where N = maximum record length / current record length)
  - The acquisitions are stored in a FIFO (first-in, first-out) queue such that when acquisitions are stopped, the most recent N are in memory
  - Acquisitions may be acquired using Run/Stop and Single/Seq modes and will continue to accumulate as long as no acquisition parameters are changed
  - As the Selected Acquisition is changed through navigation, the acquired data from the history is shown in the Waveform View along with the corresponding analysis results for math, measurements, plots and searches
  - Supports Play/Pause/Rewind capability
- 5B Series MSO models support
  - Aux-in trigger
  - Doubled frequency range on the AFG
  - Ability to determine what processor is installed in the instrument
- I3C protocol trigger support
  - Trigger capability for SDR mode
  - Trigger capability for Start, Repeated Start, Stop, HDR Restart, HDR Exit
  - Trigger capability for Hot-Join
  - Trigger capability for SDR - Direct and Broadcast packets
  - Trigger capability for Errors - Missing Ack, T-Bit
- Digital data to Analog conversion
  - Added support for data plot for below buses
    - I2C, PSI5, I3C, CAN, LIN, RS232, Ethernet, AutoEthernet, SPMI, SVID, SENT, eUSB, USB, ARinc, eSPI, SPI, SpaceWire, MDIO, SDLC, Flexray, 1-Wire, ETHERCAT, Audio, Mil-Std-1553
- IMDA
  - Support of Speed, Acceleration and Direction measurements as part of mechanical group using Quadrature Encoder Interface (QEI)
  - QEI comes with or without Index option for Speed and Direction but not for Angle measurement
  - Support of Angle measurement using Hall Sensors
  - Support of Torque measurement using two methods i.e. Armature Current and Load cell
  - Time Trend for direction measurement
  - DQ0 improvements - Display of Resultant vector and QEI / Hall Sensor type configuration to integrate theta. This is available with Mechanical license
- FRA improvements: (5/6-PWR)

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- Set to Spectral Averaging (SV) as default in AutoRBW mode
- Support of SV RBW profile as part of FRA measurements configuration

- Added new Programmatic Interface commands to support hardware assisted averaging
- Added spectrum view peak markers results table
- Added report viewing capability (like image viewer) with in the TekScope application
- Added phase noise smoothing filter
- Added analog view of digital data (supported only for data fields)
- Added application activate PI command
- Added trigger sensitivity user interface for Edge Trigger level and Noise Reject

#### Defects Fixed:

- Power quality measurement in 5/6-PWR fails to detect edges
- FRA measurement does not guarantee that the measurement is computed on current acquired waveform
- SOA mask on log scale appears bend
- On 6B Series MSO, Acquisition System Error occurs when BUS trigger is selected
- Mounted drives which do not exist are not cleared
- Save all doesn't work for IQ channels
- Invert saving image doesn't work for SV markers and graticule lines
- PI command SAVE:WAVEFORM is broken for `_SV_BASEBAND_IQ` into Matlab (.mat)
- 5 Series MSO scopes do not save Screen Capture with mouse operation
- The Y-axis scale in X-Y Plot does not match with the scale of the waveform
- Fix Multi file selection in the File Utilities file chooser
- Confirmation message is saved in screen capture
- Spectrum view x-axis units disappear in log mode
- Channel labels are not saved in the exportable CSV files
- `DATA:SOURce:AVAILable?` PI command returns false positive when channel is enabled and acquisition is stopped
- On 4 Series MSO, USBTMC issue with register returning incorrectly
- On 6B Series MSO, BW in channel badge is incorrect sometimes after setup file recall

#### Known Issues:

- **IMDA:**
  - QEI with or with out index Z pulse option is disabled for Angle and DQ0 measurements
  - Torque autosest does not work. User have to set this manually
  - The low pass filter is not supported for mechanical measurement with digital sources
  - IMDA Autosest will not set the threshold level in case of digital sources, User has to set this manually
- **UDF tool:**
  - Sometimes Custom/RC/RRC filters initial magnitude or phase response may not be readable at higher sample rates
  - Custom filter length is limited to 15K and Root cosine / Root Raised cosine filters are limited to 64K length
  - UDF filters are designed using scope horizontal sample rate. If Ref waveforms are recalled on 5/6 Series MSO that are captured from 5K/7K/70K scopes will not work due to sample rate incompatibility
- Report viewer is disabled on 4 Series MSO scopes
- Digital to analog waveforms are not possible for all the available bus fields
- Sometimes TekDrive do not unmount from File Utilities
- Verbose in File Utilities does not show messages for wrong passwords
- Sometimes display flickers during Math AutoScale
- TekScope flickers when we recall one of the demo files for a serial decode like I2C and scrolling with the MPK (A knob) in the bus table
- Loading multiple ArbFlt to math expression gives "File Not Found" error
- On 5 Series MSO scopes, when firmware is updated to v1.36, it might result in HOSTID changes making the licenses disappear. The work around to this is to downgrade the firmware to 1.16 with

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USB drive plugged in at Scope's Startup, this recovers the HOSTID and then upgrade to 1.24.9 followed by 1.36 upgrade

- On 5 Series MSO, Recall setup file with certain configuration crashes TekScope after running for 2hrs
- With FastFrame turned ON, Saving images/data has sync error
- WHEA-Logger Event 17 warning PCI Express Root Port
- Incorrect spectrum view's vertical scale after session recall
- On 4 Series MSO, the cursor line lags & jumps when rotating the Multipurpose knob
- When using the scopes remotely, the command Search:Search<x>:Navigate {min,max} do not work and returns 32 when \*ESR? is run after them
- On 5 Series MSO, Screen flickers when switching loss or BH curve measurement is added
- On 5 Series MSO and 6B Series MSO, False pulse width trigger occurs sometimes
- Scrolling through Bus decode or Math makes the screen flicker
- Changing TDP77 input mode via GUI results in incorrect measurements
- Inability to save a single FastFrame of data
- Installing 1.36 on Linux with a forceinstall.txt file on the usb drive will cause a hang during install. Customers should delete the forceinstall.txt file and try again. The scope will appear to be installing and warn the user not to remove the usb drive, but will never finish installing. It is safe to power cycle the instrument and take out the drive in this case.

Version: [1.36.2.1356]

Last Revised: [25-July-2021]

Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:

MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64, MSO64, MSO64B, MSO66B and MSO68B

Version: 1.36.2.1356 (25-July-2021)

#### New Features:

- IMDA
  - Added Speed, Acceleration and Direction measurements as part of mechanical measurements using Hall sensors
  - Enhancement made to Power Quality (PQ) measurement by providing 'Fundamental Frequency' and 'All Frequencies' as configuration
  - Support of demo session files for mechanical analysis
- Power (5/6-PWR)
  - Support custom limits for Harmonics measurement
- User Defined Filter (UDFLT)
  - FIR Filters – Added Raised cosine, Root raised cosine and custom filters
  - Added generate button to the Math filters. User can now design the filter and view the filter response. User can apply the filter coefficients and see the filtered waveform on the Math
  - Support of demo session files with examples of new filters
- EtherCAT protocol solution
  - Decode in single ended/differential mode
  - Decode basic EtherCAT frame/basic EtherCAT frame with VLAN tag
  - Decode EtherCAT frame in UDPIP frame / EtherCAT frame in UDPIP frame with VLAN tag
  - Decode CRC/manchester errors
  - Search start of frame/end of packet/protocol/address/tag control information/ EtherCAT header length
  - Search UDP/IP header/datagram/network variable/mailbox
  - Search errors like FCS/manchester errors

- SMBus protocol solution
  - Decode with and without PEC byte
  - Decode read/host notify/block read/block write/read64/write64/read32/write32/read word/read byte/write word/write byte/send byte/receive byte/quick command
  - Decode address resolution protocol
  - Decode errors like NACK/PEC Errors
  - Search start/repeat start/address/host address/device address/command code/data/stop
  - Search errors like Ack/Nack/PEC
  
- Updated simplified chinese user manual

#### Defects Fixed:

- 5 Series MSO shuts down after invalid temperature reading
- Negative Pass/Fail Limit value is not allowed for "Falling Slew Rate" measurement
- Optical probes using autoseg crashes scope
- Waveform label is not getting recalled from .wfm file
- Vertical offset is incorrect when alternative units with very small ratio are used
- DDC can't be deskewed between channels
- Cursors readout unit does not display J (i.e. Joule) for s\*W (i.e. seconds \* Watt)
- Call out feature does not work on invert image save
- Self-cal and degauss error message popups prevent user from taking screen capture
- Restoring a session file with multiple mask segments has missing segments
- When the 4 Series MSO is used with a second display using the HDMI connector the screenshot contains both the display and a second image of the splash screen
- Save As and Recall have different default folders
- SQRT function causes offset in Math waveform in time
- In 5 Series MSO, .mat file save as function overwrites without warning message
- Confirmation message is saved in screen capture
- When using the search function for a parallel bus event, the navigate arrow buttons of the front panel and '<' '>' icon in Search badge don't work sometimes
- Setting AFG arb waveform via PI does not update until UI badge is tapped
- Cursor readout goes off screen with many channels and zoom enabled
- Mouse pointer is visible in screen captures on 4 Series MSO
- Button Title mistakes exists with 'Traditional Chinese' Language Option
- Channel badge unit is incorrect when power quality demo session file is recalled
- Custom limits on harmonic measurement for pass/fail status do not exist
- FRA measurement maximum amplitude exceeds scope internal AFG maximum amplitude
- FRA measurement do not support up to maximum frequency value as available in external AFG
- IMDA DQ0 measurement does not show clipping error in the results badge when waveforms are clipped
- DPhy decode issues found on a particular DUT waveforms

#### Known Issues:

- IMDA:
  - The low pass filter is not supported for mechanical measurement with digital sources
  - IMDA Autoseg will not set the threshold level in case of digital sources and hence user has to set this manually
- User defined filter (UDF) tool:
  - In some cases, the Custom/RC/RRC filters initial magnitude or phase response may not be readable at higher sample rates
  - Custom filter length is limited to 15k and Root cosine / Root raised cosine filters are limited to 64k length
  - UDF filters are designed using scope horizontal sample rate. If Ref waveforms are recalled on MSO 5/6 series that were captured from 5K/7K/70K scopes, then UDF filters will not work due to sample rate incompatibility
- Scroll bars do not work with touch interaction in file choosers and measurement tables. Work around is to use the swipe gesture on the context panel rather than the scroll bar. The other workaround is to use the Mouse interaction
- Touch/Mouse interactions do not work on the Scope instrument when the e\*Scope browser

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is closed using Alt+F4. Work around is to use the Alt key by attaching a keyboard to the scope instrument

- Autoset clips sinewave signal of frequency  $\geq$  9GHz
- 5 Series MSO crashes when a saving file is larger than the available free space of USB media
- Wrong BW in channel badge occurs from a setup file recall on 6B Series MSO
- Video Trigger option is missing in 4-ULTIMATE-PER license on 4 Series MSO
- 100BASE-TX trigger position is incorrect
- USB buffer times out in specific settings on 6B Series MSO
- Warning message popup window appears after firmware update
- Scope autoset is not functioning properly with probe TDP7704
- 6B Series MSO does not reliably detect P77BRWSR accessory
- 4 Series MSO Date/Time badge takes 2 seconds to respond
- Search Mark-on Missing for MIL-STD-1553 Protocol

Version: [1.34.8.1084]

Last Revised: [23-May-2021]

Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:

MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64, MSO64, MSO64B, MSO66B and MSO68B

Version: 1.34.8.1084 (23-May-2021)

NOTICE: If you are updating the scope firmware from a version number lower than 1.24, please download and install version 1.24.9, available at the links below, before installing the most recent version. This does NOT APPLY to MSO64B or MSO68B.

4 Series MSO:

<https://www.tek.com/oscilloscope/mso44-software/4-series-mso-firmware--v1249>

5 Series MSO (non-Windows):

<https://www.tek.com/oscilloscope/mso56-software/5-series-mso-nonwindows-firmware--v1249>

5 Series MSO (Windows):

<https://www.tek.com/oscilloscope/mso56-software/5-series-mso-windows-os-firmware--v1249>

6 Series MSO (non-Windows):

<https://www.tek.com/oscilloscope/mso64-software/6-series-mso-nonwindows-firmware--v1249>

6 Series MSO (Windows):

<https://www.tek.com/oscilloscope/mso64-software/6-series-mso-windows-os-firmware--v1249>

New Features:

- Added new Curvestream Programmatic Interface query to support acquisition data streaming  
See the 4/5/6 Series MSO Programmer Manual for details
- User-defined trigger hysteresis:
  - Allows the user to set a custom trigger hysteresis value instead of the automatically provided calibrated hysteresis value
- Virtual Keyboard support added for German, French and Italian languages
- Added Image Viewer for viewing images in the scope application  
The supported files for viewing are all the image types (like .png, .bmp, .jpg) and session file (.tss)
- Save/Recall waveform/setup/session to the cloud using TekDrive supported on 4 Series MSO
- Enabled users to abort the save/recall operations when saving/recalling files to/from TekDrives
- CXPI protocol solution:
  - Decode in event Trigger/Polling method

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- Decode for Normal/Sleep/Long/polling Normal/Polling long frames
- Decode in UART format
- Decode for CRC/Parity/IBS/Frame error
- Search for packets like PTYPE/DLC/Data/FrameID/ExtDLC/Network management
- Search for Parity/CRC/IBS/Frame errors
  - Search for Normal/Sleep/Long/polling Normal/Polling long frames
- eSPI protocol solution:
  - Decode in single and dual I/O mode
  - Decode for channel independent commands
  - Decode for posted and non-posted peripheral commands
  - Decode for virtual wire channel commands
  - Decode for OOB message channel commands
  - Decode for flash access channel commands
  - Decode for CRC/Invalid command Opcode/Invalid cycle type
  - Search for Start/End
  - Search for LTR, Interrupt, WAIT\_STATE
  - Search for channel independent commands
  - Search for posted and non-posted peripheral commands
  - Search for virtual wire channel commands
  - Search for OOB message channel commands
  - Search for flash access channel commands
  - Search for CRC/Invalid command Opcode/Invalid cycle type
- User Defined Filter (UDF):
  - Supported on MSO5, MSO6/6B and TekScope Offline platforms
  - UDF can be invoked from Scope Math and is different from legacy MATH arbitrary filter
  - Design Low Pass, High Pass, Band Pass and Band Stop filters for a given cutoff frequency and filter order
  - Supports both IIR and FIR filters. Design Butterworth, Chebyshev I and II, Elliptical, Bessel Thomson IIR Filter responses and Gaussian Window
  - Design Hilbert, Differentiator, All Pass FIR filters
  - View Magnitude, Phase, Impulse and Step responses in filter creator window for the designed filters
  - Filtered signal can be viewed as Math waveform in wave view
  - Save and Load filter file from filter creator window
    - User also has an option to save and load Magnitude, Phase, Impulse and Step responses
  - Filter file is in .flt format and is unique to Tektronix
    - User can use this as MATH arbitrary filter file on MSO 5/6 series and it is not compatible with DSO 5K/7K/70K series
  - For standard filters, normalized cut off frequency in the range of 0.05 to 0.45 times Sample Rate is supported
- IMDA updates:
  - Updated Power Quality demo file with math autoscale on time trend plot turned ON
- PWR updates:
  - Improvements to AutoRBW configuration in Control Loop Response, PSRR and Impedance measurements for handling spikes in plots and ensure results are stable over multiple runs
  - In FRA measurements, make sure Stop frequency is always greater than Start frequency
- On 6 Series MSO, CALibrate:INTERNAL:STATus? (Query Only) returns two additional status
  - TEMPDRIFT indicates that a signal path calibration is recommended due to a temperature drift since the last signal path calibration.
  - WARMUP indicates that the scope has been powered on for less than 20 minutes and has not reached a stable temperature yet.

#### Defects Fixed:

- Unexpected glitch/violation in eye diagram when clock recovery method is either

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- "Explicit Clock Edge" or "Explicit Clock PLL"
- :FILESystem:READFile PI command does not work for raw socket connection
- Math FFT on MSO6B series and 10GHz BW model limits the maximum frequency to 6GHz
- Iteratively querying CURVE? PI command with fast frame acquisition ON for more than 8hrs could lead to scope crash
- On 4 Series MSO with eScope, \*OPC? command does not work sometimes on raw socket connection
- On 4 Series MSO, AUTO DIMM does not work
- \*OPC? query times out over raw socket. The raw socket session becomes inaccessible. It can only be fully recovered with a reboot
- On 6 Series B MSO running Windows, removed sleep mode
- 4 Series MSO crashes for specific Spectrum View settings
- On Windows scopes, USB VISA connection could become unresponsive after failed PI command
- Math FFT magnitude now displays Vrms instead of Vpeak-peak
- Spectrum View trace now displays Vrms instead of Vpeak-peak
- Rf vs Time Magnitude trace now displays Vrms instead of Vpeak-peak
- Spectral density value is incorrect when the Spectrum View unit is set to "V"
- Spectrum View average trace computation is incorrect
- Rf vs Time Magnitude waveform is empty when the Spectrum View unit is "V"
- Help file updated by removing the Frame Column in Bus Decode Table section
- Scope app hang for 3 mins if network drive host is disconnected
- Mask/Limit test shows incorrect failures
- XY plot grid values are corrupted after zoom
- XY Plot Cursor Readouts display unexpected values at some settings
- Scope crashes when Search Results Table is turned on and then off and then cursor moved using multipurpose knobs
- Error shown is misleading when user tries to save to the root directory of TekDrive path
- Default font size is set to 15 instead of 18 on 4 Series MSO
- Copying the file path after selecting a file in the list view of the file browser crashes the scope
- Programmatic Interface Backward Compatibility (PI Translator) settings reset after reboot
- PS15 decode doesn't work with current input
- Corrected source details shown on Phasor diagram to match source chip with DQO Results badge
- Error message is shown on Math badge when arbitrary filter coefficients are empty
- Clock recovery pattern files are not saved as part of setup and session files

#### Known Issues:

- On 4 Series MSO, Act On Event for screen capture doesn't save specified number of screenshots
- The session files created on 4 Series MSO carry an empty screen capture of the scope
- Confirmation message or mouse cursor appear in screen captures on 4 Series MSO in some cases
- Call Outs are not drawn properly when screen capture is set to Inverted colors
- eSPI - When searching for Virtual Wire packet response without header, it searches for OOB packet response
- Sometimes MATH error comes up due to filter blanking time  
Increase the horizontal duration, until the MATH output is displayed
- Delay measurement using backward direction wraps first source on left side of display to end of 2nd source on right side of display
- Cursors readout unit should indicate J (Joule) for s\*W
- Multiple UI text mistakes on 'Traditional Chinese' Language Option
- Cursors remembers wrong scroll speed after using zoom
- Vertical offset is broken when alternative units are used
- On MSO46 if you setup a search, then zoom on one event and try to navigate to the next event using navigate button, after some movement the zoom window will start to move on its own
- On 5 Series MSO, save as function overwrites without warning message using .mat
- Double quote is missing after 'Sample Mode' in the responses to :WFMO and :WFMO:WFID queries
- The Spectrum View slices when in Linear mode show the horizontal units, but for LOG mode it only displays for one slice at a time

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- Sometimes when saving a screen capture on the MSO46, the save confirmation message is visible
- Restoring a session file with multiple mask segments has missing segments
- DDC can't be deskewed between channels
- Capability of eScope on the 4 Series MSO is slow and choppy
- Querying wfmo:nr\_pT? too quickly gets wrong results
- When using the search function for a parallel bus event, the navigate arrow buttons of the front panel and '<' '>' icon in Search badge don't work well. After tapping the icon, the instrument jumps to the next event, but immediately jumps back to the first event.
- Missing results and spike in impedance measurement results
- Ripple measurement gives the SEVERE ERROR when 1 Gpts RL is used
- AWG .wfm file longer than 8k pts causes read issues
- \*ddt command returns an error
- DDR decode on long record lengths have memory issues
- P6247 + TPA-BNC does not show proper bandwidth (1GHz)
- Copy and Paste in File Utility modifies file saved date
- Accessing mounted drive can lock up scope on bad networks
- Touch screen of the 5 Series MSO intermittently locks up
- When the scope is stopped between long acquisitions and a new channel is turned on, queries to the scope will indicate the new channel is available and has data even though it doesn't
- 6B Series MSO scopes should not have sleep mode available.

Version: [1.32.1.306]

Last Revised: [04-Jan-2021]

Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:

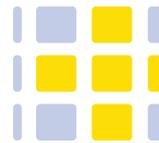
MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64, MSO64, MSO64B, MSO66B and MSO68B

Version: 1.32.1.306 (04-Jan-2021)

#### New Features:

- AFG Burst Mode
  - The AFG now supports Burst as well as Continuous output
  - The number of cycles in a burst is configurable
- Eye Mask Autofit displaces the mask horizontally on an eye-diagram to a location where the mask hits are minimum or zero
- Option Bundles
  - Option Bundles enable customers to fully outfit/future-proof their oscilloscopes at dramatically lower prices than before
  - Option bundles are now available on 6 Series B MSO scopes
- Network Drive improvements
  - Enhanced debugging of network mount issues with Verbose mode
  - Mounted and disconnected drives have different icon indicators
- New Spectrum View Readouts
  - Indicating when negative frequencies are included in RF vs. Time Waveforms
  - Indicating RF vs. Time Waveform Span: shown when the user expands the spectrum view badge
- IMDA Measurement enhancements
  - Support 1V1I DC wiring on output side of the drive
  - Save ACQ Trend Plot with sub-measurement name in the CSV file
  - Updates to context sensitive help (F1) for IMDA measurements

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- Updates to refresh Source Setup panel on 4 Series MSO scopes
- 5/6-PWR Measurement enhancements
  - Spectrum View is the default analysis method for all FRA measurements
  - In FRA Spectrum View method, auto-adjust RBW and Span based on the signal frequency
  - User selection for Auto or Constant RBW
  - Measure DC signals in Power Quality measurement
  - Renamed Custom Results Table to Harmonics/FRA Results Table
  - Improvements to power Autoset for multiple efficiency measurements with DC sources
- CPHY protocol solution
  - Decode CSI/DSI protocols in HS/LP mode
  - Decode Display in Word/Symbol formats
  - Decode Single ended and Differential with Bitrate maximum of 10Gbps
  - Search for Events: SoT, EoT, Escape Mode, Stop
  - Search for Packets: Symbol, Word, Short, Long
  - Search for Errors: CRC in HS mode, CRC/ECC in LP mode
- 1-Wire protocol solution
  - Decode 1-Wire in Standard and Overdrive modes
  - Decode Standard ROM commands: ReadROM, MatchROM, SkipROM, SearchROM, AlarmSearch
  - Decode Overdrive ROM commands: OverdriveSkipROM, OverdriveMatchROM
  - Search for Pulse Reset and Presence Pulse
  - Search for ROM commands in Standard and Overdrive modes
  - Search for Errors like CRC
- RS232 - Added support for Tx and Rx modes
- SVID v1.9 Support to add VR14 decode/search capability

#### Defects Fixed:

- When TekDrives, sometimes file sizes > 2 GB show incorrectly as 0 KB in the Size column
- Tapping on Export Log Files button in the SelfTest menu crashes the scope
- Reports may now be saved to TekDrive for Linux scopes
- The Network drives are automatically shown in file utilities menu once the LAN is restored. But sometimes the mounted drives are missing in the file utilities menu (after reopening)
- Removed Auto Dim controls for 4 Series MSO, since auto dim is not supported
- System Acq Error with SPI bus, Fast Acq and infinite persistence in overnight runs
- Appending a report causes all previous screen captures to be replaced with the current screen capture
- Switching loss measurement throws warning when Ton or Toff region is not found in a switching cycle
- Modified LL-LN conversion equation for 3 Phase motor waveforms
- Bus handle support for buses with more than one lane
- Cannot copy files >6 MB from internal storage to USB on 4 Series MSO scopes
- When using a TPP0850 on 6 Series MSO, the leading edge of a step has way too much overshoot
- Current acquisition statistics are incorrect on Fast Frames
- CSV file write speed is very slow, especially to external USB drives on 4 Series MSO scopes
- Copying large files from MSO4 series to USB drive failed/timed out

#### Known Issues:

- In FRA Spectrum View, auto RBW value can go higher as frequency increases. Workaround is to uncheck auto RBW and configure manually
- CPHY sample rate should be >2.5 times the Bitrate to avoid performance issues decoding LP
- CPHY Word decode displays payload in LSB order
- Save confirmation message sometimes appears in screen captures
- On Windows scopes, saved .csv file has an extra line break
- Mask/Limit test on MSO5 sometimes shows incorrect failures
- Memory leak can cause scope to stop acquiring data after 1.5M acquisitions
- FILESystem:READFile command does not work for raw socket connection

- FFT on MSO6B 10GHz model limited to 6GHz
- When a setup file from MSO64 is loaded to MSO68B using Linux drive, the active channels can not be turned off completely
- Waveform not saved with setup when using a 1s delay
- MSO64 can't decode more than 64M record length for Parallel Bus
- \*OPC? command does not work for raw sockets on 4 Series MSO with escape
- Trigger offset value in .wfm file is incorrect
- With a current probe, save/recall of session file shows units of V instead of A in channel badge
- Can't use keyboard navigation in Browse window from Save As
- Setting AFG arb waveform via PI does not update until UI badge is tapped
- Turning on FastFrame sets Trigger Holdoff Time to 0
- Save/Recall doesn't work via PI commands when path is TekDrive
- Linux Scope sometimes may take 5-7 minutes to acquire the DHCP IP address, when scope is rebooted with ethernet cable disconnected and connected back after the restart.
- Save screen capture to a TekDrive and restarting the linux scope would crash the application. The work around is to restart the scope again

Version: [1.30.5.215]

Last Revised: [04-Dec-2020]

Products: This firmware supports 5 and 6 Series MSO products

This firmware version is intended for:

MSO54, MSO56, MSO58, MSO58LP, LPD64 and MSO64

Version: 1.30.5.215 (04-Dec-2020)

#### New Features:

- TekDrive file storage
  - QR Code authentication to connect to TekDrives
  - Mount/unmount the TekDrives
  - Save/Recall Waveform, Setup, Report, Session, Mask to/from TekDrives
  - Save Screen Capture, and Table Data to TekDrives

#### Defects Fixed:

- None

#### Known Issues:

- Sometimes if the file sizes > 2 GB then the Size column in the File chooser shows incorrectly as 0 KB
- In the Waveform tab in File choosers, the file filters do not refresh (workaround is to use the prev/next/up navigation buttons and come back)
  - Sometimes while saving files you may face errors (work around is to try saving the file using the browser- <https://drive.tekcloud.com/#/>)
  - When network is disconnected and if scopeapp is rebooted TekDrive is not present in File Utilities (workaround is to connect to internet and reboot the scope instrument)
- In the Reports tab in File choosers, the reports do not get generated if TekDrive is chosen in linux
- The Save auto-increment in file choosers is not supported
- Loading TekDrive files from following menus is not supported- Install License, Add Filter in Math Advanced, CDR Pattern files, AFG Arbitrary Waveform files, and SOA Masks
- Tapping on Export Log Files button in Self Test menu crashes the scope

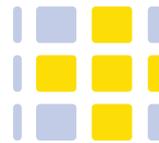
Version: [1.30.1.8359]

Last Revised: [30-Sep-2020]

Products: This firmware supports 4 Series MSO products

This firmware version is intended for:

MSO44, MSO46

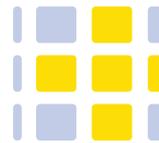


Version: [1.30.2.8421]  
Last Revised: [23-Oct-2020]  
Products: This firmware supports 5 and 6 Series MSO products  
This firmware version is intended for:  
MSO54, MSO56, MSO58, MSO58LP, LPD64 and MSO64

Version: 1.30.1.8359 (30-Sep-2020) and 1.30.2.8421 (23-Oct-2020)

#### New Features:

- Programmatic Interface Backward Compatibility
  - Control 5/6 Series MSO with previously unsupported legacy commands
  - Flexible and customizable XML definition of compatibility commands
  - Enhanced Query support
- Connected Scope Preferences
  - Improves user experience and more effectively detects and resolves software issues by sending anonymized usage data to Tektronix
- New View License Options window, available from the Help menu, shows details about all available options.
- Spectrum View is included on 4 Series MSO without a license.
- RF vs. Time waveforms can be chosen as sources in the Advanced Math Equation Editor.
- Act On Event works in Run mode as well as Single Sequence mode.
- New Option Bundles enable customers to fully outfit / future-proof their oscilloscopes at dramatically lower prices than before.
- New Time to Max and Time To Min Timing measurements which calculate the time from the max/min measured value relative to the trigger point.
- Show I/Q Sample Rate when the Spectrum View badge is single tapped
- Delete All Measurements from the right click menu or PI command to clear all active measurements in the results bar
- Delete All Searches from the right click menu or PI command to clear all active searches in the results bar
- Removal of User Interface Tutorial from Help menu
- DPHY protocol solution
  - Decode for CSI2.0/DSI2.0 protocols, including Escape mode, High speed burst mode, LP mode, and 8b9b line encoding in LPDT and HS mode
  - Search for SoT/EoT, long and short packets, Escape mode, and Errors
- Manchester protocol solution
  - Decode by setting the "transitions for 0" to Falling/Rising
  - Decode for Packets by allowing the user to define the Packet view
  - Decode with Sync Pattern, Start Index, Tolerance, and Idle Bits
  - Search for Sync, Packets, and Errors
- SDLC protocol solution
  - Decode for SDLC frames, control fields, and FCS Errors
  - Decode of Modulo 8/128 frames
  - Decode of Frames in NRZ and NRZi modes



- Search for Packets, Frames, and Frame sequences
- eUSB protocol solution
  - RAP (Register Access Protocol) support
  - Fix for EOP detecting early in SOP
  - Additional search options for EOP Bits/Sync Bits using comparators
  - Selection for host and peripheral repeater mode
  - Differential mode for HS
- SPI protocol solution enhancements
  - Support for MISO and MOSI data lines in a single decode Bus
- IMDA Measurement enhancements
  - DQO Control Logic Analysis measurement
  - Time trend plot for Power Quality measurements
  - Acquisition trend plot for Power Quality and Phasor Diagram measurements
  - Saving of ACQ trend plot with time stamp
  - Measure Power Quality per Cycle or per Record
  - IMDA measurements are now known as "3-Phase" on the 4 Series MSO
  - Simplified setup of IMDA measurements
    - Input/Output/Ripple Analysis setup combined into Electrical Analysis
    - Global and Local source configuration
    - Separate input and output wiring selections
    - Input Power, Phasor Diagram, Input Voltage and Input Current merged into Power Quality
    - Additional wiring options for the Efficiency measurement
    - 1 Phase-2Wire DC (1V1I) wiring for Inverter (DC-AC) systems
    - Line Ripple and Switching Ripple consolidated into Ripple measurement
- 5/6-PWR Measurement enhancements
  - FRA measurements support both FFT and Spectrum View analysis methods
  - Magnetic Property computes Hysteresis and Total Loss components
  - Magnetic Property supports secondary voltage sources

#### Defects Fixed:

- 4 Series MSO crashes in some cases when USB drive removed after saving waveforms
- 4 Series MSO crashes with multiple Math FFTs
- Curve query of 1M points crashes scope when output data width does not match native data width
- File Menu appears in some saved screen shots
- Set to Unity button in vertical settings menu does not function correctly
- Search Results Table CSV save file doesn't include search hit data
- Japanese translation for "Configure View..." is incorrect
- Act on Trigger button is missing language translations
- Measurement histograms erroneously have only one bin under some settings
- Double-tapping the Zoom Factor field does not open the virtual keyboard
- Spectrum View Phase vs. Time cursor reference doesn't work properly
- Support of Save/Recall session for FRA measurements
- Sum of True Powers considers polarity at each phase (2V2I)
- FRA measurements with Spectrum View sometimes report Acquisition subsystem error
- Display Sum of True Power, Apparent Power and Reactive Power results for both LL and LN wirings
- Toff correction in Switching Loss for Flyback type
- RMS value uses FFT approach for Line Ripple and Switching Ripple measurements
- When saving, the filename auto-increment function does not work correctly in some instances
- On the 4 Series MSO, overwriting a screen capture file does not work
- Probe termination is not always reported correctly in the channel badge
- Pressing Enter on USB keyboard or Return on touch keyboard produces invalid character in save file names

- The Auto increment function doesn't work correctly when you save a waveform file in .MAT format and you have source as "ALL"

#### Known Issues:

- When moved to another computer, files saved in Linux show GMT timestamps instead of the local time zone of the scope.
- The TMDP0200 probe doesn't remember voltage range settings after a scope restart.
- The 4 Series MSO may unexpectedly timeout on VISA queries over USB.
- When using digital channels as sources for Parallel Bus, some users have reported receiving an Out of Memory warning from the scope which requires a reboot to restore the scope to a useable state.
- Screen capture issues
  - The mouse pointer is sometimes visible in screen captures.
  - Saving a screen capture from the right-click menu sometimes results in the menu appearing in the screen capture.
- DPHY protocol support: LP ECC Error Handling is currently not supported
- When connecting a non-touch external monitor and setting the display to Extended mode, the oscilloscope touch screen may no longer respond to touch.  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope does not operate correctly when switching between Windows accounts.  
Solution: Avoid Windows fast switch of user accounts. Sign out of one account before logging into another one
- CSV write speed is very slow on the 4 Series MSO, especially to external USB drives.
- Scope hangs for 3 minutes if network drive host is disconnected before unmounting the drive  
Workaround:
  1. If the host is in a sleep/hibernate state, wake it up and the scope will connect.
  2. If the host is disconnected, the scope will come back after 3 minutes with an error message about save failure.
- Power FRA measurement issues
  - Ensure valid signals are present before performing Autoset.
  - Recall of a session file may sometimes show an empty results table.  
Workaround: Add another results table
- DPM Ripple Autoset does not work as expected for Ripple frequencies above 50MHz.
- The reference voltage level must be entered manually for DPM Overshoot and Undershoot measurements. The default value is 0V.
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall.
- ACQ trend plots do not support Save/Recall session
- Rogowski probes may unexpectedly display an 'input source mismatch' error.  
Solution: update the Vertical Channel -> Probe setup to Other and set as 'A'

- NRZ protocol does not decode on 4 Series MSO with record lengths greater than 10M.
- Three Phase Autoset may fail for DC voltages over 200V. It may be necessary to manually adjust the Horizontal Scale, Vertical Scale, and Vertical Offset to get a properly scaled waveform for Power measurements.
- WFMOUTPRE:WFID? PI Command may return incorrect vertical scale number when set to 10mV/div
- Scope crashes when all the sources are saved in .csv waveform with gating set to resample
- Append report replaces all images with most recent screen capture
- Index tab is unavailable in TekScope help
- When perpetual license is loaded, license type in About window is displayed as floating instead of node locked

Version: [1.26.5.7750]

Last Revised: [26-Mar-2020]

Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:

MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64 and MSO64.

Version: 1.26.5.7750 (19-Mar-2020)

#### New Features:

- 1 Gpts and 500 Mpts Record Length options for 6 Series MSO
- 500 Mpts and 250 Mpts Record Length options for 5 Series MSO
- RF vs. Time Triggering (Magnitude vs. Time, Frequency vs. Time)
- Measurement Limits Pass/Fail Testing Improvements:
  - Badge Navigation in the Pass/Fail Testing page
  - Show measurement failures and status for accumulated acqs in badge
  - Show pass/fail status and failures for current and accumulated acqs in table
  - Failure navigation from Measurement badge and front panel
  - Failure navigation on Fast frames
- Resampling capability for Programmatic Interface CURVE query
- Restart option in the File menu
- Coordination between Search Table and Waveview navigation
- SVID Protocol Solution (Decode and Search)
- MDIO Protocol Solution (Decode and Search)
- EUSB2 Protocol Solution (Decode and Search)
- 8B10B Symbol Search added choice of Either/Pos/Neg
- Inverter(DC-AC) technology added for IMDA measurements:
  - Input Voltage
  - Input Current
  - Input Power
  - Ripple
  - Phasor Diagram
  - Efficiency
- Inverter measurements for single phase DC input and 3 Phase AC output drives
- Single phase support added to IMDA with new wiring:
  - One Phase Two Wire (Half bridge)
  - One Phase Three Wire (Full bridge)
- Display PWM Filtered signal
- Control Loop Response, PSRR, Impedance and Magnetics measurements for 4 Series MSO

#### Defects Fixed:

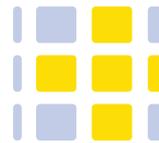
Geschäftsführer:  
Jens Ahlers  
Sitz der Gesellschaft: Berlin  
Amtsgericht Berlin  
HRB 71235  
St.-Nr. 27/413/2483  
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- Delete and Back button not working in Save As Window in Japanese
- Utility keys do not work for non-English touch keyboard
- Fixed Act on Event for Bus Search
- Eye Diagram Mask not rendering when Waveview Mask is present
- Add measurement pass/fail test results to saved reports
- Plots are not present in saved reports in different languages
- Screen captures: Badge and color chips not the same color as waveforms
- Fixed save/recall handling for filenames with multiple periods
- Reset vertical scale & position when zooming due to meas/search navigation
- Tolerance mask does not always extend all the way to the left/right of screen
- Busy indicator restricts interaction with other applications/windows
- FastAcq and Mask Testing should not be enabled at the same time
- Hide Limit Results On/Off button for measurements that always use it
- Recalling a setup with large font and 7 measurements adds scroll arrows

#### Known Issues:

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- CSV write speed is very slow on 4 Series MSO, especially to external USB drives
- Scope app hang for 3 mins if network drive host is disconnected  
Work around:
  1. If the host is in sleep/hibernate state, please wake it up or make it online
  2. Scope will come online after 3 minutes, with the error pop up related to save failure if the host is disconnected.
- For Power FRA measurement, ensure valid signals are present before performing scope autoseg on the FRA measurements
- Impedance measurement takes longer as we increase the decade points
- It is recommended to use BNC cables for Impedance measurement when the frequency of interest is below 100KHz, due to the 50 ohm termination
- DPM Ripple Autoseg does not work as expected for Ripple frequencies above 50MHz
- The reference voltage level has to be entered manually for DPM Overshoot and Undershoot measurements. The default value set is 0V
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall
- If you get 'input source mismatch' error when using a Rogowski probe, update the Vertical Channel -> Probe setup to Other and set as 'A'
- NRZ protocol does not decode on 4 Series MSO with record lengths greater than 10M
- Three Phase Autoseg may fail for DC voltages over 200V. It may be necessary to manually adjust the Horizontal Scale, Vertical Scale, and Vertical Offset to get a properly scaled waveform for Power measurements

Version: [1.24.6.7572]  
 Last Revised: [27-Feb-2020]  
 Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:  
 MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64 and MSO64.

Version: 1.24.6.7572 (27-Jan-2020)

#### New Features:

- Dynamic table paging to display more than 1k records in results table
- Wide RRB
- Callouts
- Limit Testing
- SV Log Horizontal Scaling
- Phase Noise Plot
- Act on Event-Limit Acq on Event Saves
- Probe Overage Restart
- AOE SRQ
- PMU update
- Selectable CSV Line Ending
- PI command to query a range of FastFrames
- Video Trigger
- Inverters Motors Drives Analysis (IMDA) application on MSO56 and MSO58 series oscilloscopes with Three Phase Phasor diagram and Harmonics bar graph
- PSI5 (Peripheral Sensor Interface) Protocol Solution(decode only)

#### Defects Fixed:

- Scope crashes if Bus results table is active, Fastframe enabled and summary frame is turned on
- Network mount appears to be creating security risk by using SMB1
- Act on event should be disabled in roll mode
- Can't delete or rename files in the file system when scope is in languages other than English
- No save notification when save any type of file from File->Save menu
- Firmware updates erase the manual static IP address that was setup before hand
- Spacewire decoder improvements

#### Known Issues:

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
 Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
 Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- CSV write speed is very slow on 4 series , especially to external USB drives
- Scope app hang for 3 mins if network drive host is disconnected  
 Work around:
  1. If the host is in sleep/hibernate state, please wake it up or make it online
  2. Scope will come online after 3 minutes, with the error pop up related to save failure if the host is disconnected.
- For Power FRA measurement, ensure valid signals are present before performing scope autoselect on the FRA measurements

- Impedance measurement takes longer as we increase the decade points
- It is recommended to use BNC cables for Impedance measurement when the frequency of interest is below 100KHz, due to the 50 ohm termination
- DPM Ripple Autoset does not work as expected for Ripple frequencies above 50MHz
- The reference voltage level has to be entered manually for DPM Overshoot and Undershoot measurements. The default value set is 0V
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall
- If you get 'input source mismatch' error when using a Rogowski probe, update the Vertical Channel -> Probe setup to Other and set as 'A'
- Double clicking on the results badge while Efficiency configuration tab is open could cause the scope to hang  
Work around: Single tap anywhere on the scope screen to hide the Efficiency configuration before double click

Version: [1.22.4.7207]

Last Revised: [9-Oct-2019]

Products: This firmware supports 4, 5 and 6 Series MSO products

This firmware version is intended for:

MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP, LPD64 and MSO64.

Version: 1.22.4.7207 (09-Oct-2019)

#### New Features:

- Mask Testing
- S/M/L font sizes
- Performance Eye Rendering
- Flick gesture on badges can be used for delete
- Resample Gating
- Setting date/time via PI
- Measurement limits with Acq On Failure
- Save waveforms to .Mat format
- Polar cursor readouts for XY/XYZ mode
- Save search event results (PI and/or export table)
- 8b10b protocol solution
  - o Decode capability for Control/Data Symbols
  - o Decode capability for Disparity/Symbol Errors
  - o Search capability for Symbol 8-bit and 10-bit word
  - o Search capability for Symbol/Disparity Errors
  - o Decode capability with bit rate of up-to 1Tbps for offline and 2.5Gbps for live signals
  - o Result Table
  - o Supported on MSO 5/6 series
- NRZ protocol solution
  - o Decode capability with bit rate of up-to 1Gbps
  - o Supports differential NRZ and NRZ(Inverted polarity) encoding with Bit order MSB First or LSB First
  - o Decode and Search capability for Data
  - o Result Table
  - o Supported on MSO 4/5/6 series

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- Jitter analysis measurements added in the DPM application.
- Sin(x)/x interpolation added for Control Loop and PSRR measurements.
- Support for active splitter in Impedance measurement
- Reference levels for Global and Per Source appear in a new table in the report.

**Defects Fixed:**

- Mean measurement returns higher value than Max
- Options was lost on one of Titans demo unit
- HORIZONTAL:[Mode]:RECORDLENGTH can return out-of-bounds results
- Advance Math Equation Editor scrolling behavior improvement
- Cannot set 35A offset in 5A/div
- Test copied from Save As menu is not retained after clicking Browse
- Horizontal scale in Eye Diagram is incorrect
- Mil1553 Trigger on Command - Event may occur on Status
- Randomly get wrong phase result for Frequency Response Analysis at low frequencies
- Impedance results are not correct at 380Hz
- SPMI not decoding customer waveform

**Known Issues:**

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- For Power FRA measurement, ensure valid signals are present before performing scope autoselect on the FRA measurements
- Search and mark navigation can sometimes fail to proceed on long record length due to multiple hits within same display pixel
- Impedance measurement takes longer as we increase the decade points
- DPM Ripple Autoselect does not work as expected for Ripple frequencies above 50MHz
- It is recommended to use BNC cables for Impedance measurement when the frequency of interest is below 100KHz, due to the 50 ohm termination
- The reference voltage level has to be entered manually for DPM Overshoot and Undershoot measurements. The default value set is 0V
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall
- Once the DPM Jitter demo file is recalled, reports generated do not include Measurement Result details  
Solution: Recalling any other demo file, reports generated after this will include all the details.

Version: [1.20.7.6859]  
Last Revised: [26-Jul-2019]

Products: This firmware supports 4, 5 and 6 Series MSO products  
(MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP and MSO64 model)

This firmware version is intended for:  
MSO44, MSO46, MSO54, MSO56, MSO58, MSO58LP and MSO64.

Version: 1.20.7.6859 (18-Jul-2019)

#### New Features:

- Rf vs Time Traces
- Measurement limits for DDR measurements
- Cursor and cursor readout improvements
- Additional local language UI (Simplified Chinese, Traditional Chinese, Japanese, French, German, Italian, Spanish, Portuguese, Russian)
- Spectrum View includes math operations using absolute log
- PI curve query support for Spectrum View RF and I/Q data
- Spectrum View span increases
- Export time trend data
- Backward compatible PI timestamp query
- Spacewire protocol solution (decode only)
- Automotive Ethernet product solution (decode only)

#### Defects Fixed:

- Probe comp may fail on certain channels with TPP probe on 4 Series
- Default setup fails to clear measurement plots on 4 Series
- Last setup is not recalled after restart or powerup
- TDP1000 fails to trigger with certain V/div settings, range modes and BW filters
- Bus search gating not working for jitter/eye diagrams
- File names limited to 38 characters
- Autoset does not turn on CH1 if no channels active
- Save On Trigger sometimes fails to capture new measurement values
- Fast Frame math channel \*.wfms cannot be recalled
- Shut down could hang if detaching network cable while network drives mounted
- Improved notes recall/save formatting and text wrapping behavior
- Cannot autozero P5205A probes

#### Known Issues:

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- For Power FRA measurement, ensure valid signals are present before performing scope autoset on the FRA measurements
- Search and mark navigation can sometimes fail to proceed on long record length due to multiple hits within same display pixel
- With TPR1000/TPR4000 probes, autoset may not find offset and amplitude correctly on signals outside the +/- 1V dynamic range of the probe

- Impedance measurement takes longer as we increase the decade points
- DPM Ripple Autoset does not work as expected for Ripple frequencies above 50MHz
- The reference voltage level has to be entered manually for DPM Overshoot and Undershoot measurements. The default value set is 0V
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall

Version: 1.16.6.6557 (14-May-2019)

#### New Features:

- Time gating per measurement
- Invert channel
- Local language UI (Simplified Chinese, Japanese)
- Noise density and phase noise cursor readouts in Spectrum View
- Impedance measurement under Frequency Response Analysis in Power
  - \*Recommend using passive 50 Ohm power splitter for the measurement
- The Digital Power Management and Analysis (DPM) application provides automated power rail measurements using TPR1000/TPR4000 probes
  - \* Recommend using passive probes for DPM Turn on Time and Turn off Time measurements

#### Defects Fixed:

- 50 ohm probe signal integrity issue during probe comp
- Fix crash when changing search direction on delay measurement
- Fix SPI, 2-wire rising edge polarity issue
- Save all channels setting changes setting when different channels selected
- TPP0500 probe compensation affects other channels
- Problems using high capacity (> 4TB) USB drives
- USB drive listing remains and warning message appears if USB device removed while Recall/Save windows opened

#### Known Issues:

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- For Power FRA measurement, ensure valid signals are present before performing scope autoset on the FRA measurements
- Search and mark navigation can sometimes fail to proceed on long record length due to multiple hits within same display pixel
- Default Notes text wrapping not working

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- With TPR1000/TPR4000 probes, autoset may not find offset and amplitude correctly on signals outside the +/- 1V dynamic range of the probe
- TPR1000/TPR4000 probe dynamic range indicators do not correctly follow offset but stay on the 0V baseline
- Impedance measurement takes longer as we increase the decade points
- DPM Ripple Autoset does not work as expected for Ripple frequencies above 50MHz
- The reference voltage level has to be entered manually for DPM Overshoot and Undershoot measurements. The default value set is 0V
- Channel clipping error is seen on recall of a DPM demo session if the power rail probe is not connected to the scope during recall

Version: 1.14.13.6144 (18-Mar-2019)

**New Features:**

- Spectrum View
- User selectable waveform colors
- Fixed display graticule
- I3C bus decode
- CAN.DBC symbolic bus support
- New DDR3/LPDDR3 measurements (tCMD-CMD, tCKSRE, tCKSRX)
- New DDR3/LPDDR3 search methods (Chip Select, Latency, Logic)

**Defects Fixed:**

- Flexray bus decode supports truncated TSS
- Requesting a Fast Frame from PI Curve query times out
- Bode plot measurements returns negative polarity
- Magnetic cross section units does not properly reflect area scaling (m2)
- Quickly saving screen images can occasionally catch the save confirmation message in the image
- Save As screen capture occasionally captures the Save As dialog box in the image
- 100Base-T decoder not handling decode properly when incorrect preamble is present
- Save on Trigger, selecting All sources can later get changed by selecting new channel in Waveform View display
- MSO 5-Series with Windows 10 reports serial number instead of model number as the USB identifier

**Known Issues:**

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account

- When a TDP770x probe is attached there is a "Compensate Probe" button in the Vertical/Probe Setup menu that is non-functional.
- When using the internal arbitrary/function generator, the output and offset entry fields for Sine wave are tied together.
- For Power FRA measurement, ensure valid signals are present before performing scope autoseg on the FRA measurements
- Problems recognizing certain High Capacity (4TB) USB drives
- TPP0500 probe compensation can affect other channels
- Search and mark navigation can sometimes fail to proceed on long record length due to multiple hits within same display pixel
- Default Notes text wrapping not working
- USB mass storage directory can persist in save-recall dialogues after device is unplugged
- With TPR1000/TPR4000 probes, autoseg may not find offset and amplitude correctly on signals outside the +/- 1V dynamic range of the probe
- TPR1000/TPR4000 probe dynamic range indicators do not correctly follow offset but stay on the 0V baseline

Version: 1.12.6.5888 (18-Jan-2019)

**Defects Fixed:**

- Patch to fix security vulnerability

Version: 1.12.5.5575 (09-Oct-2018)

**New Features:**

- Eye diagram mask testing
- Stacked / Overlay mix & match
- User adjustable aux-out pulse width
- DDR Essentials
- ET3 Ethernet Compliance support
- Power Bode Plot and PSRR

**Defects Fixed:**

- Cannot compensate TPxxxx probes on 6 Series MSO under Windows
- TAP1500 Autozero not working when run under Windows
- Probes attached to a TPA-BNC can't be autozero'd
- Cannot use PI command FILES:CWD to change to mapped network drive
- Save on Trigger misses signal display on long acquisitions
- Harmonics measurement not working with one source
- Smaller resolution needed for power cross section and magnetic length fields
- SENT protocol decode not handling polarity correctly
- Save on Trigger failures at slow timebase settings
- Recalled note has incorrect font size

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- Vertical scale of digital channels in Overlay mode not recalled properly

Known Issues:

- When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- When a TDP770x probe is attached there is a "Compensate Probe" button in the Vertical/Probe Setup menu that is non-functional.
- When using the internal arbitrary/function generator, the output and offset entry fields for Sine wave are tied together.
- For Power FRA measurement, ensure valid signals are present before performing scope autoset on the FRA measurements

Version: 1.10.7.5425 (29-Aug-2018)

New Features:

- 25 GS/s acquisitions
- Bandwidths of 1 GHz, 2.5 GHz, 4 GHz, 6 GHz and 8 GHz
- Support for TDP770x probes
- Support for TAP/TDP4000 probes
- 250M sample records
- Frequency response filter shape control (Optimized for Flatness or Step Response)

Known Issues:

- When connecting an non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account
- When a TDP770x probe is attached there is a "Compensate Probe" button in the Vertical/Probe Setup menu that is non-functional.
- When using the internal arbitrary/function generator, the output and offset entry fields for Sine wave are tied together.
- On very rare occasions, an invalid temperature reading internally to the instrument may cause an inadvertent shutdown of the instrument.

Version: 1.8.7 (16-Jul-2018)

New Features:

- Visual Trigger

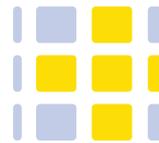
- Power: includes support for new power measurements; TOn, TOff, InRush, Input Capacitance and D0160 standard for harmonics
- Power: improve annotations for power measurements
- Additional bus decode and trigger support for SPMI bus and enhanced slow channel protocol trigger for SENT bus.
- Mount network drives
- User access to log files
- Radix specific keypads added for IP address entry
  - eScope for Windows supported (requires additional installation of VNC)
- Re-arrange badges in the Results and Settings Bar. Change bus and power table ordering by changing measurement order in Results Bar
  - Save all channels to a single CSV
- Addition of bus trigger/search for data inside/outside range for SENT bus

#### Defects Fixed:

- Saving large CSV file to USB may fail if USB drive ejected early
- TIVH probe offset range not handled correctly when exceeds oscilloscope range limits
- Cascading two filters in math expression may not yield expected results
- Screenshot in .tss file has the progress ring included when using "save as"
  - RDSON allow steps of 1 mOhm
- Fast Frame trigger out not working with Fast Frame single sequence
- Parallel bus not showing all bus waveform inputs when used with multiple digital probes
- Improved SPI bus decode performance on large data captures
- Duplicate Jitter Summary plots are created when using the PI to change measurement type

#### Known Issues:

- Power mask files created with oscilloscope firmware version 1.4.x cannot be used in firmware version 1.6.x. Use version 1.6.x and later to create and recall mask files.
- P5205A probe not recognized by 5 Series
  - When connecting a non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of



one account before logging into another user account

Version: 1.6.5 (2-Mar-2018)

**New Features:**

- Autoset improvements: optimize vertical ADC range, optimize for visibility in overlay mode, provide user-selectable options for what autoset changes, optimize autoset to use trigger source
- Power: includes support for Magnetics, Power Efficiency and RDSon measurement and plots
- Search Event Table: display search results in table view
- Stop acquisition on found search event
- Radix specific keypads added for serial bus
  - Measurements on trend plots
- Re-arrange badges in the Results and Settings Bar. Change ordering of waveform slices in stacked mode by changing badge order in Settings Bar. Change measurement table ordering by changing measurement order in Results Bar
- Gated save: save regions defined by cursors or screen gating
- Floating license: provide support for floating licenses
- Inverted screen shot
- Sample point highlight: displays sampled acquisition points when waveform style is dot mode and display is interpolating
- Enable press and hold for front panel navigation: provides auto repeat of navigation steps on hold
- Improved configuration and labelling for digital bits and channels
- 5-SEC Power up: when 5-SEC option is installed system no longer restores instrument settings on power up
- Updates and improvements to Jitter measurements
- Additional bus decode and trigger support for SENT bus

**Defects Fixed:**

- ADA400A probe displays wrong attenuation
- Resolve 1A (TIVH) probe with 2500x tip causes scopeapp to crash
- Rising slew rate measurement requires more than 1 edge on screen
- Channel BW filters not working correctly

- Attaching TAP1500 probe causes POST to fail
- Math FFT does not display custom label
- SPI decode found to crash with certain signal inputs with noise on longer record lengths
- Roll mode not working correctly in single acquisition mode

Known Issues:

- Mask files created with oscilloscope firmware version 1.4.x cannot be used in firmware version 1.6.x. Use version 1.6.x and later to create and recall mask files.
  - TIVH probe offset range not handled correctly when exceeds oscilloscope range limits
  - Saving large CSV file to USB may fail if USB drive ejected early
  - Cascading two filters in math expression may not yield expected results
  - P5205A probe not recognized by 5 Series
- When connecting an non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account

Version: [1.4.9]  
 Last Revised: [07-Nov-2017]  
 Products: This firmware supports all 5 Series MSO oscilloscopes

Version: 1.4.9 (02-Nov-2017)  
 New Features:

- The 5 Series MSO oscilloscopes operates with Windows 10 operating system (5-WIN and SUP5-WIN)
  - Fast Frame : use the Fast Frame control windows to capture and view a series of triggered acquisitions without wasting acquisition memory.
- Roll Mode : lets you see acquired data without waiting for the acquisition of a complete waveform record
- TekExpress Automotive Ethernet available on Windows 10, 5 Series oscilloscopes
  - Power : includes support for Power Quality, Harmonics, Switching Loss,

SOA, Line Ripple and Switching Ripple measurements and associated plots

- Security option : supports ability to ensure secure storage of user data, enable/disable USB devices, Ethernet ports and firmware upgrade/downgrade
- Updates and improvements to Jitter measurements
- Additional bus decode and trigger support including ARINC429, Mil-Std-1553 and CAN-FD

**Defects Fixed:**

- Edge configuration not recalled correctly for skew and phase measurements
- Saving screen images too quickly results in the Save Confirmation message appearing in the next image
- Parallel bus trigger data value not restored from setup file
- File modified time/date value does not match oscilloscope time/date display
- TCP0030A Probe range displays incorrection when attempting to change the range while range mode set to Auto
- Pressing default setup while TCP0030 probe attached to CH1 changes the trigger unit from A back to V
- Save on trigger limited to 100 files
- Need to be able to set separate reference levels for same channel when used in delay measurement
- Zooming by pan/zoom from a non-zoomed state improvements
- Comment text field in Report tab doesn't support pop-up keyboard
- Scale ratio not included with saved setups

**Known Issues:**

- When connecting an non-touch external monitor and setting to Extended mode, the oscilloscope touch screen may no longer respond to touch  
Solution: Open Windows Tablet PC Settings and then select Setup. Follow instructions to calibrate Windows for the new configuration
- TekScope not operating correctly if switching between Windows accounts  
Solution: avoid use of Windows fast switch user accounts. Sign out of one account before logging into another user account

Version: [1.2.0]

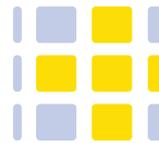
Last Revised: [23-Jun-2017]

Products: This firmware supports all 5 Series MSO oscilloscopes

Version: 1.2.0 (9-Jun-2017)

**New Features:**

- The oscilloscope now contains 17 demo sessions that can be recalled from the Utility->Demo menu. These demos operate without the need for probes or signal sources.
- The instrument displays a dialog menu informing the user when the internal temperature is approaching a critical juncture.



- FFT Phase Wrap can be adjusted beyond 180 degrees
- AFG arbitrary waveforms support CSV data format

Defects Fixed:

- Recalling saved setups now restore window size and position
- Miscellaneous settings now restored after recall of saved setups
- Notes now restored after power cycle
- Certain probe settings now restored after power cycle
- Fixes related to installing and removing option licenses
- Fixes related to save/recall menu operations
- Various crashes involving concurrent time-consuming operations
- Jitter measurement summary while acquiring
- Corrections to the online help
- Recalling setups/sessions when probe configuration has changed
- Issue using DVM and frequency counter simultaneously
- Math and cursor calculations on peak detect data
- Infinite persistence no longer cleared on certain settings changes
- Persistence now works on plot data
- Various minor issues related to USB bus decode
- Various minor issues related to LIN bus decode
- Spectrum plot of digital channel data now working correctly
- Various corner-case issues with cursors, primarily in plots
- Acquisition system error possible on 6-channel models and runt trigger
- Save on trigger now indicates operation complete
- Save on trigger may terminate prematurely
- Various issues related to the programmatic interface
- Various issues related to Undo/Redo
- Various issues related to Auto Scale on Time Trend waveforms
- Graticule scale labels for FFT
- Audio bus decode and trigger can become out of sync
- The limited bandwidth icon may appear when operating at full bandwidth
- Pushing Set to 50% sets vertical position incorrectly if non-zero
- Pinch-to-zoom doesn't expand at correct location
- Probes with alarm settings may be out of sync with the probe menu
- Ethernet bus and search may become out of sync
- FFT auto scale doesn't always set horizontal scale correctly
- Busy indicator is missing during save setup
- XY/XYZ plot labels off by factor of 2 if zoom is on
- DVM resolution may show more or less resolution, depending on scale
- Fixed limitations on amount of data shown in USB bus tables
- Trigger position with SPI bus and SS Active trigger now correct
- Flexray trigger no longer limited to 40 Mbps
- Cursor gating now works with V Bars (in addition to waveform cursors)
- Various issues with Auto Increment File Name count in Save As menu
- The number of powerups in the Self Test menu may double-count
- Various cosmetic improvements in various menus

Version: 1.0.5 (29-May-2017)

New Features:

- This is the initial release